

APPENDIX I
SITE-WIDE DOSE ASSESSMENT

Table I-1. Dose Model Calculations for Site-Wide Maximum Concentrations Detected in Surface Soil

Species	COPEC	Max C _{soil} (mg/kg)	BW (kg)	IR _{soil} (kg/day)	C _{plant} (mg/kg)	C _{worm} (mg/kg)	C _{mammal} (mg/kg)	P plant (%)	P worm (%)	P mammal (%)	IR (kg/day)	SUF	Dose (mg/kg-day)	TRV _{low} ^(e)	TRV _{high} ^(e)	HQ _{low}	HQ _{high}
Vole	Antimony	0.67	0.026	0.0003	0.027	0.67	0.001	1	0	0	0.012	1	0.020	0.059	0.59	0.3	0.03
	Cadmium	1.40	0.026	0.0003	0.747	10.8	0.333	1	0	0	0.012	1	0.361	0.06	2.64	6.0	0.14
	Chromium	114	0.026	0.0003	4.67	34.9	7.5	1	0	0	0.012	1	3.471	3.28	13.14	1.1	0.26
	Copper	62	0.026	0.0003	9.92	31.9	14	1	0	0	0.012	1	5.294	2.67	632	2.0	0.008
	Lead	234	0.026	0.0003	5.65	65.7	12	1	0	0	0.012	1	5.308	1	240.64	5.3	0.02
	Mercury	0.482	0.026	0.0003	0.314	0.82	0.026	1	0	0	0.012	1	0.150	0.027	0.27	5.6	0.56
	Selenium	0.70	0.026	0.0003	0.343	0.71	0.577	1	0	0	0.012	1	0.166	0.05	1.21	3.3	0.14
	Silver	4.81	0.026	0.0003	0.067	9.84	0.019	1	0	0	0.012	1	0.086	22	220	0.004	0.0004
	Thallium	0.185	0.026	0.0003	0	0.049	0.019	1	0	0	0.012	1	0.002	0.48	1.43	0.004	0.001
	Zinc	110	0.026	0.0003	65.3	399.7	109.4	1	0	0	0.012	1	31.408	9.6	411	3.3	0.08
	Total PCBs	0.07	0.026	0.0003	0.00035	0.1	0.245	1	0	0	0.012	1	0.001	0.36	1.28	0.003	0.0008
	Total DDT	0.36	0.026	0.0003	0.04	3.5	1.23	1	0	0	0.012	1	0.023	0.8	16	0.03	0.001
	2,6-DNT	0.20	0.026	0.0003	0.47	0.2	0	1	0	0	0.012	1	0.219	0.2	1.5	1.1	0.15
	HMX	0.69	0.026	0.0003	4.67	0.69	0	1	0	0	0.012	1	2.163	1	5	2.2	0.43
HPAH	0.176	0.026	0.0003	0.02	0.234	0	1	0	0	0.012	1	0.0126	1.3	32.8	0.010	0.0004	
LPAH	0.034	0.026	0.0003	0.415	0.150	0	1	0	0	0.012	1	0.192	50	150	0.004	0.001	
Robin ^(a) Worms + 50% Plants	Antimony	0.67	0.083	0.0004	0.027	0.67	0.001	0.5	0.5	0	0.004	1	0.020	NA	NA	NA	NA
	Cadmium	1.40	0.083	0.0004	0.747	10.8	0.333	0.5	0.5	0	0.004	1	0.285	0.08	10.4	3.6	0.03
	Chromium	114	0.083	0.0004	4.67	34.9	7.5	0.5	0.5	0	0.004	1	1.503	1	5	1.5	0.30
	Copper	62	0.083	0.0004	9.92	31.9	14	0.5	0.5	0	0.004	1	1.307	2.3	52.3	0.6	0.02
	Lead (Eco-SSL)	234	0.083	0.0004	5.65	65.7	12	0.5	0.5	0	0.004	1	2.847	1.6	8.75	1.8	0.3
	Lead (BTAG)	234	0.083	0.0004	5.65	65.7	12	0.5	0.5	0	0.004	1	2.847	0.014	8.75	203.4	0.33
	Mercury	0.482	0.083	0.0004	0.314	0.82	0.026	0.5	0.5	0	0.004	1	0.030	0.039	0.18	0.8	0.16
	Selenium	0.70	0.083	0.0004	0.343	0.71	0.577	0.5	0.5	0	0.004	1	0.029	0.23	0.93	0.1	0.03
	Silver	4.81	0.083	0.0004	0.067	9.84	0.019	0.5	0.5	0	0.004	1	0.262	NA	NA	NA	NA
	Thallium	0.185	0.083	0.0004	0	0.049	0.019	0.5	0.5	0	0.004	1	0.002	NA	NA	NA	NA
	Zinc	110	0.083	0.0004	65.3	399.7	109.4	0.5	0.5	0	0.004	1	11.735	17.2	172	0.7	0.07
	Total PCBs	0.07	0.083	0.0004	0.00035	0.1	0.245	0.5	0.5	0	0.004	1	0.003	0.09	1.27	0.03	0.002
	Total DDT	0.36	0.083	0.0004	0.04	3.5	1.23	0.5	0.5	0	0.004	1	0.087	0.009	1.5	9.7	0.06
	2,6-DNT	0.20	0.083	0.0004	0.47	0.2	0	0.5	0.5	0	0.004	1	0.017	NA	NA	NA	NA
HMX	0.69	0.083	0.0004	4.67	0.69	0	0.5	0.5	0	0.004	1	0.132	NA	NA	NA	NA	
HPAH	0.176	0.083	0.0004	0.02	0.234	0	0.5	0.5	0	0.004	1	0.0070	32.5	325	0.0002	0.00002	
LPAH	0.034	0.083	0.0004	0.415	0.150	0	0.5	0.5	0	0.004	1	0.014	26.9	269	0.0005	0.00005	

Table I-1. Dose Model Calculations for Site-Wide Maximum Concentrations Detected in Surface Soil (Continued)

Species	COPEC	Max C _{soil} (mg/kg)	BW (kg)	IR _{soil} (kg/day)	C _{plant} (mg/kg)	C _{worm} (mg/kg)	C _{mammal} (mg/kg)	P _{plant} (%)	P _{worm} (%)	P _{mammal} (%)	IR (kg/day)	SUF	Dose (mg/kg-day)	TRV _{low} ^(c)	TRV _{high} ^(c)	HQ _{low}	HQ _{high}
Robin^(b) (100% Worms)	Antimony	0.67	0.083	0.0004	0.027	0.67	0.001	0	1	0	0.004	1	0.036	NA	NA	NA	NA
	Cadmium	1.40	0.083	0.0004	0.747	10.8	0.333	0	1	0	0.004	1	0.527	0.08	10.4	6.6	0.05
	Chromium	114	0.083	0.0004	4.67	34.9	7.5	0	1	0	0.004	1	2.231	1	5	2.2	0.45
	Lead	62	0.083	0.0004	9.92	31.9	14	0	1	0	0.004	1	1.836	2.3	52.3	0.8	0.04
	Lead (Eco-SSL)	234	0.083	0.0004	5.65	65.7	12	0	1	0	0.004	1	4.294	1.6	8.75	2.7	0.5
	Lead (BTAG)	234	0.083	0.0004	5.65	65.7	12	0	1	0	0.004	1	4.294	0.014	8.75	306.7	0.49
	Mercury	0.482	0.083	0.0004	0.314	0.82	0.026	0	1	0	0.004	1	0.042	0.039	0.18	1.1	0.23
	Selenium	0.70	0.083	0.0004	0.343	0.71	0.577	0	1	0	0.004	1	0.038	0.23	0.93	0.2	0.04
	Silver	4.81	0.083	0.0004	0.067	9.84	0.019	0	1	0	0.004	1	0.497	NA	NA	NA	NA
	Thallium	0.185	0.083	0.0004	0	0.049	0.019	0	1	0	0.004	1	0.003	NA	NA	NA	NA
	Zinc	110	0.083	0.0004	65.3	399.7	109.4	0	1	0	0.004	1	19.793	17.2	172	1.2	0.12
	Total PCBs	0.07	0.083	0.0004	0.00035	0.1	0.245	0	1	0	0.004	1	0.005	0.09	1.27	0.1	0.004
	Total DDT	0.36	0.083	0.0004	0.04	3.5	1.23	0	1	0	0.004	1	0.170	0.009	1.5	18.9	0.11
	2,6-DNT	0.20	0.083	0.0004	0.47	0.2	0	0	1	0	0.004	1	0.011	NA	NA	NA	NA
	HMX	0.69	0.083	0.0004	4.67	0.69	0	0	1	0	0.004	1	0.037	NA	NA	NA	NA
	HPAH	0.176	0.083	0.0004	0.02	0.234	0	0	1	0	0.004	1	0.0121	32.5	325	0.0004	0.00004
	LPAH	0.034	0.083	0.0004	0.415	0.150	0	0	1	0	0.004	1	0.007	26.9	269	0.0003	0.00003
Raccoon	Antimony	0.67	5.7	0.03	0.027	0.67	0.001	0.5	0.5	0	0.3	1	0.022	0.059	0.59	0.4	0.04
	Cadmium	1.4	5.7	0.03	0.747	10.8	0.333	0.5	0.5	0	0.3	1	0.311	0.06	2.64	5.2	0.12
	Chromium	114	5.7	0.03	4.67	34.9	7.5	0.5	0.5	0	0.3	1	1.641	3.28	13.14	0.5	0.12
	Copper	62	5.7	0.03	9.92	31.9	14	0.5	0.5	0	0.3	1	1.427	2.67	632	0.5	0.002
	Lead	234	5.7	0.03	5.65	65.7	12	0.5	0.5	0	0.3	1	3.109	1	240.64	3.1	0.01
	Mercury	0.482	5.7	0.03	0.314	0.82	0.026	0.5	0.5	0	0.3	1	0.032	0.027	0.27	1.2	0.12
	Selenium	0.70	5.7	0.03	0.343	0.71	0.577	0.5	0.5	0	0.3	1	0.031	0.05	1.21	0.6	0.03
	Silver	4.81	5.7	0.03	0.067	9.84	0.019	0.5	0.5	0	0.3	1	0.286	22	220	0.01	0.001
	Thallium	0.185	5.7	0.03	0	0.049	0.019	0.5	0.5	0	0.3	1	0.002	0.48	1.43	0.005	0.002
	Zinc	110	5.7	0.03	65.3	399.7	109.4	0.5	0.5	0	0.3	1	12.816	9.6	411	1.3	0.03
	Total PCBs	0.07	5.7	0.03	0.00035	0.1	0.245	0.5	0.5	0	0.3	1	0.003	0.36	1.28	0.01	0.002
	Total DDT	0.36	5.7	0.03	0.04	3.5	1.23	0.5	0.5	0	0.3	1	0.095	0.8	16	0.1	0.01
	2,6-DNT	0.20	5.7	0.03	0.47	0.2	0	0.5	0.5	0	0.3	1	0.019	0.2	1.5	0.1	0.01
	HMX	0.69	5.7	0.03	4.67	0.69	0	0.5	0.5	0	0.3	1	0.145	1	5	0.1	0.03
	HPAH	0.176	5.7	0.03	0.02	0.234	0	0.5	0.5	0	0.3	1	0.0077	1.3	32.8	0.01	0.0002
	LPAH	0.034	5.7	0.03	0.415	0.150	0	0.5	0.5	0	0.3	1	0.015	50	150	0.0003	0.0001
	Owl	Antimony	0.67	0.16	0.0004	0.027	0.67	0.001	0.5	0.2	0.3	0.02	1	0.020	NA	NA	NA
Cadmium		1.4	0.16	0.0004	0.747	10.8	0.333	0.5	0.2	0.3	0.02	1	0.333	0.08	10.4	4.2	0.03
Chromium		114	0.16	0.0004	4.67	34.9	7.5	0.5	0.2	0.3	0.02	1	1.731	1	5	1.7	0.35
Copper		62	0.16	0.0004	9.92	31.9	14	0.5	0.2	0.3	0.02	1	2.098	2.3	52.3	0.9	0.04
Lead (Eco-SSL)		234	0.16	0.0004	5.65	65.7	12	0.5	0.2	0.3	0.02	1	3.031	1.6	8.75	1.9	0.3
Lead (BTAG)		234	0.16	0.0004	5.65	65.7	12	0.5	0.2	0.3	0.02	1	3.031	0.014	8.75	216.5	0.35
Mercury		0.482	0.16	0.0004	0.314	0.82	0.026	0.5	0.2	0.3	0.02	1	0.042	0.039	0.18	1.1	0.24

Table I-1. Dose Model Calculations for Site-Wide Maximum Concentrations Detected in Surface Soil (Continued)

Species	COPEC	Max C _{soil} (mg/kg)	BW (kg)	IR _{soil} (kg/day)	C _{plant} (mg/kg)	C _{worm} (mg/kg)	C _{mammal} (mg/kg)	P _{plant} (%)	P _{worm} (%)	P _{mammal} (%)	IR (kg/day)	SUF	Dose (mg/kg-day)	TRV _{low} ^(c)	TRV _{high} ^(c)	HQ _{low}	HQ _{high}	
Owl (Cont)	Selenium	0.70	0.16	0.0004	0.343	0.71	0.577	0.5	0.2	0.3	0.02	1	0.063	0.23	0.93	0.3	0.07	
	Silver	4.81	0.16	0.0004	0.067	9.84	0.019	0.5	0.2	0.3	0.02	1	0.263	NA	NA	NA	NA	
	Thallium	0.185	0.16	0.0004	0	0.049	0.019	0.5	0.2	0.3	0.02	1	0.002	NA	NA	NA	NA	
	Zinc	110	0.16	0.0004	65.3	399.7	109.4	0.5	0.2	0.3	0.02	1	18.451	17.2	172	1.1	0.11	
	Total PCBs	0.07	0.16	0.0004	0.00035	0.1	0.245	0.5	0.2	0.3	0.02	1	0.012	0.09	1.27	0.1	0.01	
	Total DDT	0.36	0.16	0.0004	0.04	3.5	1.23	0.5	0.2	0.3	0.02	1	0.137	0.009	1.5	15.2	0.09	
	2,6-DNT	0.20	0.16	0.0004	0.47	0.2	0	0.5	0.2	0.3	0.02	1	0.035	NA	NA	NA	NA	
	HMX	0.69	0.16	0.0004	4.67	0.69	0	0.5	0.2	0.3	0.02	1	0.311	NA	NA	NA	NA	
	HPAH	0.176	0.16	0.0004	0.02	0.234	0	0.5	0.2	0.3	0.02	1	0.0077	32.5	325	0.0002	0.00002	
	LPAH	0.034	0.16	0.0004	0.415	0.150	0	0.5	0.2	0.3	0.02	1	0.030	26.9	269	0.001	0.0001	
Harrier	Antimony	0.67	0.35	0.0006	0.027	0.67	0.001	0	0	1	0.03	1	0.001	NA	NA	NA	NA	
	Cadmium	1.4	0.35	0.0006	0.747	10.8	0.333	0	0	1	0.03	1	0.031	0.08	10.4	0.4	0.003	
	Chromium	114	0.35	0.0006	4.67	34.9	7.5	0	0	1	0.03	1	0.838	1	5	0.8	0.17	
	Copper	62	0.35	0.0006	9.92	31.9	14	0	0	1	0.03	1	1.306	2.3	52.3	0.6	0.02	
	Lead (Eco-SSL)	234	0.35	0.0006	5.65	65.7	12	0	0	1	0.03	1	1.430	1.6	8.75	0.9	0.16	
	Lead (BTAG)	234	0.35	0.0006	5.65	65.7	12	0	0	1	0.03	1	1.430	0.014	8.75	102.1	0.16	
	Mercury	0.482	0.35	0.0006	0.314	0.82	0.026	0	0	1	0.03	1	0.003	0.039	0.18	0.1	0.02	
	Selenium	0.70	0.35	0.0006	0.343	0.71	0.577	0	0	1	0.03	1	0.051	0.23	0.93	0.2	0.05	
	Silver	4.81	0.35	0.0006	0.067	9.84	0.019	0	0	1	0.03	1	0.010	NA	NA	NA	NA	
	Thallium	0.185	0.35	0.0006	0	0.049	0.019	0	0	1	0.03	1	0.002	NA	NA	NA	NA	
	Zinc	110	0.35	0.0006	65.3	399.7	109.4	0	0	1	0.03	1	9.566	17.2	172	0.6	0.06	
	Total PCBs	0.07	0.35	0.0006	0.00035	0.1	0.245	0	0	1	0.03	1	0.021	0.09	1.27	0.2	0.02	
	Total DDT	0.36	0.35	0.0006	0.04	3.5	1.23	0	0	1	0.03	1	0.106	0.009	1.5	11.8	0.07	
	2,6-DNT	0.20	0.35	0.0006	0.47	0.2	0	0	0	1	0.03	1	0.0003	NA	NA	NA	NA	
	HMX	0.69	0.35	0.0006	4.67	0.69	0	0	0	1	0.03	1	0.0012	NA	NA	NA	NA	
	HPAH	0.176	0.35	0.0006	0.02	0.234	0	0	0	1	0.03	1	0.0003	0	32.5	325	0.0000	0.00000
	LPAH	0.034	0.35	0.0006	0.415	0.150	0	0	0	1	0.03	1	5.83E-05	26.9	269	0.0000	0.00000	

Shading indicates HQ>1.0.

Note: For birds, two sets of low TRVs were modeled for lead: the Navy/BTAG TRV exceeded an HQ_{low} of 1; the Eco-SSL TRV did not exceed an HQ of 1.

Total DDT is the sum of 4,4'-DDT, 4,4'-DDE, and 4,4'-DDD.

LPAH – low molecular weight polycyclic aromatic hydrocarbons

HPAH – high molecular weight polycyclic aromatic hydrocarbons

NA – not available

(a) assumes an omnivorous diet for the robin

(b) assumes only an invertivorous diet for the robin

(c) For mammal receptors: TRVs for cadmium, copper, lead, mercury, selenium, thallium, zinc, and Total DDT were obtained from U.S. EPA Region 9 Navy/BTAG; TRVs for antimony were obtained from U.S. EPA, 2005; TRVs for chromium were from Sample et al., 1996; TRVs for silver came from ATSDR, 1990; TRVs for 2,6-DNT were from ATSDR, 1998; and TRVs for HMX were from USACHPPM, 2001. For avian receptors: cadmium, copper, lead, mercury, selenium, zinc, and Total DDT were obtained from U.S. EPA Region 9 Navy/BTAG; TRVs for chromium were obtained from Sample et al., 1996; and the other TRVs for lead were from U.S. EPA, 2005.